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GENERAL INFORMATION



May, 1950

# Soil Conservation

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

# SOIL CONSERVATION •

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## WELLINGTON BRINK

Editor

Art Work by

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**HELP AT TROUGH.**—When cooperators in West Virginia's Upper Ohio and Little Kanawha Soil Conservation Districts get down to the job of building a stock watering trough, the districts help them by providing use of steel forms at a cost of \$4 for the first trough, \$3 for the second, and \$2 per trough thereafter. The forms can be assembled in 30 minutes, and removed in 25 minutes. Concrete sets about 36 hours before the forms are removed.

The 1,100-pound forms cost the districts \$196.80. The largest sections weigh 200 pounds. The forms are used to cast troughs 7 feet 6 inches long, 2 feet deep, and 2 feet 4 inches wide (inside measurements). The walls are tapered, 6 inches thick at the bottom and 4 inches at the top. The job requires 32 cubic feet of 1-2-4 mix. The trough holds 255 gallons. Each district owns one set of forms and both sets now have been in constant use almost a year.



**FRONT COVER.**—A very unusual practice is shown: dewberries supported by stakes instead of wire trellis. They are on contour, of course, which is not unusual. The farm belongs to William Daly, Berrien County, Mich. Photographer is J. E. McKittrick.

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# SEVEN GENERATIONS ON AN INDIANA FARM

By R. H. MUSSER

**M**ANY well-informed Americans are watching with apprehension the continuing upsurge of population in this country and the equally constant decline of soil resources.

Aside from the limited new land which can be brought into production through drainage or irrigation, there are no new frontiers remaining in this part of the Western Hemisphere.

Most people are willing to concede that American standards of living must tumble if population, already past the 150-million mark, continues to increase at the rate of 6,000 new Americans a day or  $2\frac{1}{2}$  millions annually. This hypothesis is predicated on the assumption that the United States will continue to lose the equivalent of 500,000 crop acres each year through wind and water erosion.

However, alarmists might strike a more optimistic note after a visit to the farm of J. Lee Foster, near Attica, Ind. For here lies the answer to our dilemma. Seven generations of Fosters have helped to work out the solution, and it is a relatively simple one. The answer: sustained maximum productivity of our existing

cropland through the soil conservation type of farming.

Since the beginning of time, no man has ever cultivated this western Indiana farm except a Foster. Benjamin Foster who lived in Madison County, Ohio, took out the original land patent October 11, 1825. Shortly after that his son, James, loaded his young wife and baby into a prairie schooner and followed the setting sun westward to Indiana. By the time James died in 1845, much of the native prairie sod had been broken out and put under cultivation.

Little farm land in the country excels the Foster farm from the standpoint of potential production. Of the 220 acres, all except 60 acres of rolling land on the north quarter lies as level as a table top. The predominating soil is Wea silt loam, black and rich in organic matter. It is well-drained land with a gravel underlay and the topsoil ranges up to 3 feet in depth. Yet even land of this kind can be ruined by poor management.

Little is known about the early Fosters, but by the time George Foster took over the land in 1875, the pattern of good stewardship was already becoming evident. George, fourth in the line of descent, was the father of J. Lee Foster, present owner.

NOTE.—The author is regional director, Soil Conservation Service, Milwaukee, Wis.



Grass waterway where Foster stands, with diversion at left, was once a gully.



Some of Foster's fine Angus cattle.

In his day, George Foster was regarded by his neighbors as a "clover crank." While others followed corn with corn, George Foster practiced a 4-year rotation of corn, oats, wheat, and clover. And in drought years his yields doubled those of neighboring farmers. His principal income came from sale of clover seed and livestock. "Give me enough rain to get the crop up in good shape and my land will raise a good crop without another drop," he told his friends.

In his declining years George Foster turned the farm over to his son and a few years before his father's death in 1922, J. Lee Foster became the owner. Today he is still active in managing the land, in partnership with his son, Paul Foster, who lives in a new bungalow built not far from the home place.

J. Lee Foster began with a 4-year rotation of corn, oats, wheat, and clover, and as early as 1912 was spreading lime. As a result, he produced one of the first good crops of alfalfa ever grown in Fountain County.

Since then the entire farm has been limed regularly with never less than 2 tons to the acre being applied every 4 or 5 years. Heavy applications of fertilizer are also a standard practice. In an average year the land receives 400 pounds to the acre of 8-8-8 fertilizer which J. Lee Foster and his son, Paul, plow under with sweetclover. In addition,

150 pounds per acre of 0-20-20 is drilled in the row on corn that same season and a like amount of 3-18-9 for oats.

Because the land is level, with deep, productive topsoil, the Fosters are able to use shorter and more intensive crop rotations than are generally recommended. Their basic rotation is corn, oats, and sweetclover. In addition to corn and oat land, the farm includes three 14-acre fields which are in a corn-oats-clover rotation and are used for poultry.

The north 60 acres of rolling land has been developed as permanent pasture, part of it in birds-foot trefoil and the rest in an alfalfa, bluegrass, and trefoil mixture. Here graze some of the finest registered Aberdeen Angus cattle to be found in the Midwest.

The foundation cow was "Enchantrene 6th", bred on the Tolan farm near Pleasant Plains, Ill., and winner in her class at the International.

Principal income comes from cattle and poultry. J. Lee Foster carries 2,000 white leghorn laying hens through the winter and few poultry plants are more modern or so well managed. For J. Lee Foster believes in producing a quality egg and marketing it on a quality market. That's why eggs from the Foster farm command a premium.

All manure from the Angus herd and the poultry yards goes back on the land and every stalk of



crop residue is plowed under. Because this well-managed farm usually produces more corn than the livestock will consume, the Fosters market the excess but they put the proceeds back into fertilizer and lime for the soil from which the corn came.

When Fountain County farmers organized their soil conservation district, electing J. Lee Foster as a supervisor, this "permanent farm" was one of the first to be visited by technicians of the Soil Conservation Service. J. Lee Foster and his son had a problem no Foster had ever been able to solve—a big gully on the north 60 acres.

SCS technicians are no strangers to such gullies nor are they in doubt as to the remedy. They helped the Fosters develop a complete farm conservation plan, based on the scientifically determined capabilities of the land. And they helped them develop a well-engineered water disposal system which wiped the gully from the face of the farm.

Brush which had overgrown the flats at the lower end of the big gully was cleared away, a 1,000-foot diversion was built to protect it from further flooding, and today a fine meadow grows on what was once waste land. The entire drainageway above was reengineered and developed into a gently sloping grass waterway. That was the end of the gully.

Proof that the permanent type of agriculture the Fosters practice pays off in dollars and cents can be found from a study of the farm records.

In analyzing these, Purdue University economists were amazed to learn that the Foster farm during the lean year of 1932 returned 11.8 percent on the investment. That same year 81 average Indiana farmers had a return of *minus* 0.8 percent.

In 1946, 64 Indiana farms averaged 66.8 bushels of corn to the acre. The Foster farm made 90. On measured acreage checked by the college in 1948, one field on the Foster farm averaged 127.6 bushels of corn and the other averaged 144.9 bushels.

One generation ago a good corn crop on the same land would have averaged 50 or 60 bushels. But the Fosters of 1950 have better fertilizer, hybrid seeds, and a soil conservation system of farming. With poor soil these new advances are to less avail but the Fosters have been good stewards of their soil. It is as productive today as in the days when their forefathers turned it with a sod-buster and worked it into a smooth seedbed by

dragging their fields with the top of an old crab-apple tree.

Here, then, lies the answer to America's problem of expanding population and declining soil resources—a complete farm conservation plan, providing proper land use and treatment according to needs, developed by the farmer with needed technical assistance made available through his own soil conservation district. By this route can be found a permanent agriculture which maintains maximum productivity of the land and insures that future Americans will be able to maintain a decent standard of living.

## DISTRICT PROFILE

WRIGHT  
of  
IDAHO



Silas L. Wright

Silas L. Wright, president of the Idaho Association of Soil Conservation Districts, has spent a large part of a full lifetime working for the betterment of his community and for others. It was no surprise to his friends when he took the

leadership in getting the Bear Lake Soil Conservation District organized in southeastern Idaho back in 1940. Nor were they surprised this year when Idaho's soil conservation leaders chose him to head their State association.

Silas Wright is a mild-mannered, soft-spoken man with an uncanny knack for getting things done. He likes people and people instinctively like him. The perpetual twinkle in his eye attracts people and his friendly warmth and inspiring counsel seem to bring out the best in them. His ability to work with others and direct their energies toward a stated objective has earned Mr. Wright the reputation as one of Idaho's outstanding community leaders.

For more than 45 years he has devoted long hours and considerable personal expense to the affairs of his church, the Church of Jesus Christ of Latter-Day Saints. From 1906 to 1908 he filled a mission to California, paying all of his own expenses and devoting his entire time to church work. Later, he served as branch mission president and bishop of his local Bennington, Idaho, ward from 1911 to 1918. When the Montpelier stake of the Latter-Day Saints Church was formed, Mr. Wright was named counselor to the president of the stake and served in this capacity until 1937 at which time he was himself appointed president and served until 1947.

Throughout the period of active service to his church, Wright found time to manage a community store in Bennington, become one of southeastern Idaho's leading farmers, serve four terms in the Idaho Legislature, and help direct the affairs of his community as county commissioner.

In his farming operations, Silas Wright has always applied the same temperate philosophy that has governed his personal, everyday living. He believes that the soil should be treated with kindness and proper care; he wouldn't think of overworking his land any more than he would abuse or overwork his livestock.

In recent years, Wright has scaled down his farming operations considerably. When he first became interested in scientific soil conservation and helped organize the Bear Lake district back in 1940, he was farming some 640 acres, most of it in dry-land grain with just enough irrigated pasture to feed the livestock, which he thinks every farm ought to have. He has since reduced his holdings to a little over 200 acres with only about

146 acres in dry-land grain and the rest in pasture, hay, and irrigated alfalfa. There is still room for livestock on the Wright farm, however. True to his convictions, Wright always has two or three dairy cows and a few calves and has worked out a unique livestock-management plan that leaves him free to come and go as he pleases. When he and Mrs. Wright are there, they milk the cows for home use. When he is gone, he lets his friends milk the cows and keep the milk in return for feeding them.

Wright's son, E. Dean, is a graduate of the University of Chicago and is now serving on the faculty of the University of Utah.

In talking with groups of people, Silas Wright has a habit of clearing up confused points by drawing on a seemingly endless stock of personal anecdotes, drawn mostly from his experiences on the farm near Bennington. The humble logic of his stories, coupled with a humorous twist that is usually present, seldom fails to dispose of differences of opinion.

Idaho's soil conservation leaders have no doubt as to the future of their State association as long as Silas Wright is on hand to help guide its affairs.

—WILLIAM L. SOUTHWORTH.

**STATE MAKES MONEY.**—Practices installed under its complete conservation farm plan since October 1948 were a main factor in the establishment of a new operating profit of \$5,557.13 at the State's Pinecrest Sanitarium farm in West Virginia in 1949. After operating costs amounting to \$42,000 had been deducted, Secretary George W. Ballard says profits in the dairy amounted to \$3,243.08, while profits in operations were \$2,314.05.

Dairy production amounted to 60,000 gallons of milk. The milk was consumed by sanitarium patients, staff members, and employees. Other farm production included 29,600 pounds of pork, 298 bushels of oats, 422½ bushels of wheat, 17 tons of hay, 220 tons of ensilage, 5,075 pounds of cabbage, and numerous minor items. The 11 full and part-time employees were paid salaries and wages totaling \$13,500.

Pasture management has been so carefully conducted that the pasture season has been increased 1 month, Charles Vaughan, superintendent of State farms, reports. The pasture program at Pinehurst is considered to be the best among State institutions. Under the improvement program established by Vaughan, farm production increased 20 percent in 1949. The farm is a cooperator in the Southern Soil Conservation District. Its complete conservation plan is being revised in cooperation with Floyd F. Rothlisberger, SCS district conservationist, for inclusion of more detailed forestry and game food and wildlife cover practices.



Grouped here are several technicians representing county, State, and Federal agencies cooperating in insect war. The Julian Soil Conservation District took the lead and coordinated operations.

## TEAMWORK WINS IN SOUTHERN CALIFORNIA

By LEE O. HUNT

**A** FEW years ago, representatives of several agricultural agencies met to discuss a local problem in San Diego County, Calif. Opinions differed as to the responsibilities and limitations of the agencies. After a few heated remarks had been made, a silvery haired veteran of many years experience sagely observed: "It would appear that the problem confronting us is sufficiently large and complex for all of us to chew on instead of wasting our energies chewing on each other."

From that time on, the philosophy of cooperatively chewing on mutual problems became deeply rooted in San Diego County, where some 116 farm products are grown commercially. Topography varies from nearly level land at sea level to rough

mountain slopes of 6,000 feet or more. The average annual precipitation ranges from  $4\frac{1}{2}$  inches to 42 inches, including snow. The wide variation creates many difficult and complex agricultural problems. It also explains to a large degree why farmers have organized 11 soil conservation districts in the 1 county. This is a story of how one of these soil conservation districts and the community it serves went about getting the necessary help to solve an emergency problem brought on by a 2-year drought and the aftermath of war.

The Julian Soil Conservation District covers much of the upper watersheds of four of the six main river and drainage basins of San Diego County. Thus, the district is guardian for a large part of the water supply for metropolitan San Diego and surrounding cities and for the county's coastal and valley farm lands.

The little mountain town of Julian and the dis-

Note.—The author is work unit conservationist, Soil Conservation Service, Julian, Calif.

strict area are hosts annually to many thousands of visitors, tourists, and vacationers who flock from San Diego, Los Angeles, and cities of the Imperial Valley.

The district directors, equally cognizant of their responsibilities to farmers, ranchers, and the land and people below, have pursued a vigorous program of soil and water conservation for dry land deciduous orchards and for range and timber lands.

Tremendous demand for lumber and wood products during the recent war jumped logging operations from a few hundred thousand board feet per year to several million feet. Lumbering had never been extensive enough in southern California to warrant its being classified as a timber-producing area. Consequently, provisions of the California Timber Practices Act which regulate cutting and slash disposal were not administered in the district. The urgency of getting war-needed lumber out of the forest led to indiscriminate cutting and the leaving of vast quantities of slash in the woods. This created serious fire and insect hazards.

Rainfall during the 1945-46 season was far below average. The following year's rainy season yielded barely half the normal precipitation. Humidity repeatedly dropped so low as to be hardly measurable. Only constant vigilance by county, State, and Federal fire organizations prevented major disasters that would have denuded the vital watersheds and caused heavy loss of property. The area breathed a sigh of relief when the worst of the fire season was past. But no sooner was the threat of fire gone than another menace appeared. Frantic calls from farmers, resort operators, cabin and home-site owners, townspeople and even tourists, told of pine trees dying in wholesale lots. By the spring of 1947, some areas showed as high as 90 percent of all pines killed on the drier south slopes. The usual endemic population of western pine, red turpentine, and engraver bark beetles had suddenly flared to epidemic proportions.

Another year of drought might wipe out all pines in the district. The epidemic posed a threat as well to the magnificent sugar, yellow, Jeffrey and Coulter pines in nearby Cuyamaca State Park and in the Cleveland National Forest Mt. Laguna Recreation area. Dynamic leadership and effective action were needed.

The board of directors of the Julian Soil Conservation District invited representatives of the Soil Conservation Service, the United States Forest Service, the State Division of Forestry, the Extension Service, the San Diego County Department of Agriculture and Natural Resources, and the Julian Chamber of Commerce to meet and discuss the emergency. It was shown that—

(1) Private, county, State, national forest, and public domain lands were all infested.

(2) None of the agencies had authority or funds to carry out a control program throughout the afflicted area.

(3) The State Division of Forestry could, under existing State laws, declare a Forest Insect Protection Zone, and match funds raised from local sources and carry on control work. It was necessary, however, that a responsible local organization be established through which the agency could work. Such an organization was needed to publicize the problem, solicit and collect funds, and obtain permission for State forestry crews to enter all properties to remove infested trees.

Such a committee was formed to organize a pine beetle control project. Specific actions and responsibilities were taken and assigned—

(1) The Julian Chamber of Commerce was selected as the local organization to publicize the project, make necessary contacts, raise funds, and handle finances.

(2) The Bureau of Entomology and Plant Quarantine was requested to furnish technical guidance in making surveys and planning methods of control.

(3) The Soil Conservation Service through The Julian Soil Conservation District furnished aerial conservation survey maps showing vegetative types, as well as recent aerial photographs showing infested areas. Property lists, land-use data, and other information gained in farm conservation planning and contracts were supplied to the committee and cooperating organizations.

(4) The State Division of Forestry agreed to furnish spotting and survey crews, foremen, supervision and administration of the field project, power and hand tools and equipment, and half the cost of the control work.

(5) The United States Forest Service had been carrying on beetle control work in the





Speed was a key factor in the rout of the beetles. Farmers and technicians used the most modern tactics and equipment. Field crew members here man a power saw to cut through a fallen pine.

Cleveland National Forest and supplied valuable advice in the use of new techniques, materials, and control crew organization.

(6) The County Department of Agriculture and the Agricultural Extension Service assisted in publicity and public relations.

Within a month the committee sponsored a panel discussion of the undertaking before a dinner

meeting of the Julian Chamber of Commerce. Excellent news coverage in county and urban papers told the story of the menace to the pine forest.

The committee sent a circular letter to all property owners and others requesting assistance. Crews began spotting infested areas and assembling material and equipment. Contributions be-

gan to arrive and by the time the fire season was over in the fall of 1947 insect crews took to the field.

It soon became evident that the job was too big for local people to finance by themselves. The committee went before the county board of supervisors and asked the county to match funds raised locally. Hearings brought out the splendid cooperation and coordination of the many organizations involved. The county agreed to finance a fourth of the cost of the work. Other organizations such as the Grange, the Women's Club, the Ancient Order of Foresters, the soil conservation district, as well as private land owners, contributed funds.

Throughout the winter and spring, three crews worked to cover the protection zone before the next fire season halted operations. By 1949 all areas of severest infestation had been treated and the Bureau of Entomology and Plant Quarantine made an intensive survey, under the direction of F. P. Keen of the Forest Insect Laboratory, to determine the effectiveness of control work done and the status of insect population. On January 16, 1950, Keen wrote the Julian Pine Beetle Committee:

"I'm pleased to see from your letter of January 7 that the Julian community is planning to go ahead with the maintenance beetle-control program recommended by this laboratory. The beetle epidemic has now been reduced to the point where only a limited amount of work each year should be sufficient to keep it under control, at least in the more important recreational areas. Our Mr. Engen recently made a survey of the area in which he found that the total 1949 loss in the Julian-Pine Hills area was approximately half that of 1948. He estimated that there would be about 250 trees requiring treatment this winter. In the Cuyamaca Park area, where no control work was done, there was a threefold increase in 1949 loss over that of 1948. It would seem that in the face of very adverse timber-growth conditions the control work in the Julian area held losses much below what they otherwise might have been."

To forestall conditions which might lead to another pine beetle epidemic at some future date, the committee and district, supported by the chamber of commerce, requested that the Julian and surrounding timber lands be classified as a timber-producing area under the State Forest

Practices Act. As a result of this request and the work under way, surveys were made and San Diego County was included in the Southern Sierra Pine Timber area. The State Division of Forestry is thus empowered to assist timber owners and loggers in woods sanitation and in administering State forest laws, particularly in regard to slash disposal. The community is hopeful that this step will prevent any large-scale epidemic of pine beetles from ever again threatening San Diego County's timber, watershed, and recreation areas.

**NEW COOPERATORS RECEIVE GIFT.**—For several years the Bent (Colo.) Soil Conservation District has sent 14 subscriptions to *SOIL CONSERVATION Magazine* to schools, supervisors, the library, and so on. Beginning with 1950, the district decided to give each new district cooperator a subscription. The following letter is used to announce the gift:

DEAR ———:

We wish to welcome you as a new cooperator in our and your soil conservation district. It is sincerely hoped you will continue with the excellent start you have made toward a perpetual farming operation of your farm through soil and water conservation.

As a new cooperator we are having sent to you, free of charge, a one-year subscription to "Soil Conservation" magazine, the official organ of the Soil Conservation Service. We know you will find this an exceptionally interesting publication, and it is hoped you will see fit to renew your subscription at the end of the year.

Very truly yours,

(S) C. P. Bryant,  
C. P. BRYANT,

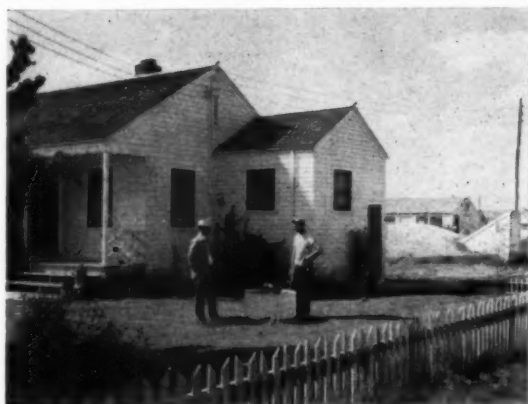
President, Board of Supervisors.

**POTTER AND CLAY.**—For generations the family of J. G. Teague had followed the potter's trade in Moore County, N. C., and Teague himself is a skilled potter. But he has decided, as a cooperator in the Neuse River Soil Conservation District, to give up the job of molding pots in favor of molding land.

"All my life I have molded clay, and a good potter earns good wages," he commented. "But I like working with the land better, and it pays better. I realize that just as it takes skill to mold pots, it takes skill to work with the land. So I went to the Soil Conservation Service man, whose trade is working with the land, and he has been able to show me how."

**42 MILES OF DRAINAGE.**—Cooperators in the Greenbrier (W. Va.) Soil Conservation District have installed 42 miles of tile drainage in the last year. A tile ditcher and 24 carloads of tile were used. Good corn and grass are growing on land that was too wet for use last year.

# THEY FOUND SECURITY ON IRRIGATED LAND



Modern home and attractive lawn reward the Suras for courage and foresight in being first settlers in Buffalo Rapids project.

By WILLIAM A. HARKIN

**I**T was only a 6-mile move for John Sura, his wife, Meta, and son, James. But in a sense it was a long journey—from 960 acres of dry land and a precarious existence to 103 irrigated acres and comparative security.

The Suras were the first settlers in Division I of the Buffalo Rapids irrigation project near Glendive, Mont., the first of its kind to be completed in the State.

They have farmed this place for 8 years now, and know what this project means to the people. They raise most of the feed for a 38-head dairy herd on a little over 2½ acres of land per head; on the dry land it took 10 times as much.

"I don't think I ever could go back to the old farm," Mrs. Sura explained. "We lived there over 25 years. We had some good years, and we had some bad ones. I'll never forget the terrible drought in the 1930's. We never were sure, and we couldn't have a lawn and flowers.

"Now, we have this beautiful lawn around the house, and flowers and trees and garden. It's much nicer living here. That means a lot."

The Suras, of course, aren't the first Montanans to move onto a new irrigation project. They are, however, the first to move onto one where land

had been prepared for irrigation before it was settled and where new farm units were laid out—irrespective of section lines—so that each could support an average family.

That is what distinguishes the Buffalo Rapids lay-out. Under the terms of the Case-Wheeler Act, the Bureau of Reclamation was charged with developing the irrigation water supply and building the canals to deliver water to each farm and the major drainage structures.

The job of the Department of Agriculture was to procure the land, lay out the farm units, level the land, develop it for irrigation, lay out the farm irrigation and drainage systems, sell the units and make collections.

This project is in a narrow strip about 50 miles long adjacent to the Yellowstone River from Glendive to Terry. Four pumping plants along the river supply the water. The total irrigated project area includes 25,907 acres, 16,472 acres having been in Government ownership and 8,435 acres having remained in private ownership.

Division I, the largest part of the project, has been finished and most of the farm units that were Government-owned have been sold. Land preparation has been finished on the rest of the project, and installation of concrete irrigation structures for control of the water is under way. When this job is finished, the farms in Division II will be ready.

This development work was done only on the federally owned lands. Technical aid was supplied to owners of private lands without cost, on request, and construction equipment was made available if desired. The land owners paid full cost of such developments.

First step, after buying the lands that were for sale, was to make a complete topographic map of the area. As parts of the map were completed, they were turned over to soils technicians to map the soils information on them. Both surface and subsurface soil conditions were examined and the land classified into four capability categories. Three of these are land that can be irrigated. The fourth class remains dry land.

Other agricultural specialists developed cropping plans adapted to the local soils, climate, and

NOTE.—The author is soil conservationist, Soil Conservation Service, Glendive, Mont.

marketing conditions, and determined the approximate size of farms needed to employ a farm family, provide a good family living, pay the cost of annual farm operations (including annual irrigation construction, operation, and maintenance costs), and provide for overhead expenses incident to farm ownership.

Thus, before any development work was undertaken, the amount and location of the land that could be irrigated satisfactorily and the size of unit needed were known. With this information at hand, the Soil Conservation Service technicians outlined the farm boundaries on the project map, providing enough Class I and II land to give a reasonable net return under average management. Such Class III land and dry land as exists in the project is attached to the various units in a way to assure efficient use.

The boundaries were checked on the ground to determine their soundness, to be certain that they conformed to topography, and to find out how well the shapes of the fields contributed to efficient operations. This map also guided the Bureau of Reclamation in locating laterals and main drains.

Engineers of the Soil Conservation Service then made detailed topographic surveys of the land to be leveled, planned the farm distribution system, staked the cuts and fills needed, and supervised the leveling work. Leveling work on Government-owned land was done with Government-owned equipment.

After the land was leveled and floated, the SCS engineers laid out the farm irrigation and drainage systems and supervised installation of check, turn-out, drop, and siphon structures needed to control the water. Irrigation ditches were plowed out with a machine pulled by a small track-type tractor.

As soon as the land was leveled and the distribution system constructed, it was leased temporarily to a cooperative, the Buffalo Rapids Farms Association, formed by local farmers. Its purpose was to make the land produce some income pending the time the farms were ready for sale. Further, this offered an opportunity to have the land in soil-building crops for a period before it was sold.

Sale of the farms took place in small groups as soon as they were ready. To date, 61 units have been sold in 4 groups ranging from 8 to 23 in number. Twenty-five units and a community pasture (some dry land that lies above the main sup-



Mr. and Mrs. Sura and son, James, in yard of home near Glendive, Mont.

ply canal) were ready for sale last fall. Eight units are being withheld from sale until the main drain shall have been built by the Bureau of Reclamation and the land can be irrigated safely. Twenty-four of the units are feed bases for operators who run livestock on dry-land range. The other 70 units are complete irrigated farms.

These sales have not been made on the first-come-first-served basis. The farm units are first appraised on the basis of their long-time earning powers under average management. Then applicants for purchase are "screened" by a family-selection committee made up of six local residents and the project supervisor for SCS. These men look into the applicant's background to learn his experience and in this way assure that settlers are qualified farmers who will have a good chance of succeeding. Each purchaser is given a map of his farm and a conservation plan is worked out for it. Qualified veterans of World War II get preference.

It is to be noted that most of the families that sold their dry land to the project are now purchasers of irrigated farms.

The Suras were the first. They started operating the place before the house and other buildings were built. They have had to make some adjustments during the transition from dry-land to irrigation farming, and as is true with all newly irrigated places, some further smoothing of fields has been necessary.

"But we've got it in good shape now and the production is good," Sura said, shaking himself into his work clothes, for it was just before milking time and he had just got back from a trip to town.



"Even with army worms attacking the oats last year, we made better than 50 bushels per acre."

All of the production of the farm goes to feed the dairy cattle. Alfalfa is raised for hay. Annual crops are principally oats and other feed grains. The cows are pastured on irrigated grass.

Milk is bottled on the farm and sold to customers on the route. This, and the garden and some flower culture as a hobby, is son James' major part of the venture. He has modernized the milking barn, and the milk is handled and bottled in a modern milk house.

"No, I didn't have trouble learning to irrigate," Sura continued. "It did take a little time to iron out some kinks, but that didn't amount to much."

"Now, Dad," Mrs. Sura interposed, "I remember several times you were pretty grumpy and ready to go back to the old farm."

Sura grinned.

"Well," he said, "I wasn't used to it, then. I guess I did get a little grumpy, all right. But honestly, this has been a whole lot different than starting out from scratch to make an irrigated farm all by myself."

"Sure, there was still some work to do. You can't get it perfect the first time. Fills don't settle evenly, so there will be some high spots to be shaved off and a few places where a little more earth has to be added. But really, there isn't a lot of work needed. This place was actually ready to operate when I got it."

Sura also was impressed with the way the farm was laid out and then appraised on the basis of the earning power of this particular unit, not on the basis of a generalization of a group of farms.

"We were given a 40-year contract," he explained. "And I believe that under most circumstances this farm could pay out with reasonably good management. As it is, we've had some better-than-average years and are quite a bit ahead of schedule. We expect to get the farm paid for in just a few more years."

The Suras like their irrigated farm better than ever this year. The neighborhood from which they came had trouble again. Their old friends saw crop hopes dashed by a shortage of moisture. It is a precarious sort of farming that they left behind.

And since they are in the Dawson County Soil Conservation District, they can continue to get

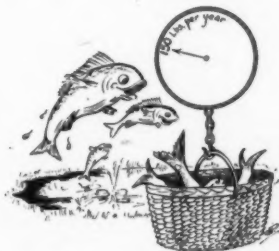
help from SCS technicians and from other farmers in the district after the project is fully completed.

It takes a little more initial investment by the Government to develop an irrigation project this way than it did when water was delivered to the high point on a farm and the rest of the job was up to the farmers individually. Usually with only limited resources, these people faced a heart-breaking job, trying to make a living and at the same time get their farms under irrigation. Many failed.

The Buffalo Rapids project office opened in November 1939, when negotiations to buy the land were begun.

Families here are succeeding. And the Soil Conservation Service has shown it isn't necessary to "plow under a couple of generations before an irrigation project can succeed." Already the average value per acre of crops produced on this is listed fourth highest among all the irrigation projects in the country.

**FARM POND STOPS FIRE.**—When flames virtually wiped out a \$40,000 farm machinery center and \$50,000 in equipment, at Jefferson, Frederick County, Md., in February, water pumped from Hershel Boyer's 2-million-gallon spring-fed farm pond a quarter mile away enabled firemen from four nearby towns to confine the fire to the one building and save several adjacent structures, a large barn, and a hay stack, some of which were smoldering. Firemen strung 3,000 feet of hose and used two pumpers, one at the pond and the other as a booster at a relay point, to develop 100 pounds stream pressure.



**62 FARM PONDS.**—Cooperators in Frederick and Catoctin (Md.) Soil Conservation Districts have built 62 farm ponds under the guidance of SCS technicians, at a cost of \$33,816.98. This is an average of \$545.54 per pond. Aggregate area under water is 43.2 acres. Forty-four of the ponds have been stocked. After 2 years, bass in some of the ponds are 10 inches long, while bluegills weigh one-half pound and are 8 inches long. At least 150 pounds of fish should be taken from a pond yearly to keep production balanced.



Grass-timber forage type; fair to good condition. Soil is sandy loam, 8 to 20 inches deep, on clay and rock substrata. Production of good forage grasses and legumes is satisfactory but would be improved by applying good grazing practices.

## EROSION ON MOUNTAIN PASTURES IN ITALY

By W. T. WHITE

**A**N important phase of grazing-land management on the highland pastures of Italy is the control and prevention of erosion of the topsoil.

Mountain pastures, as the uncultivated mountain grazing lands are called in Italy, are usually located at elevations of 1,200 to 2,600 meters. They are of three general forage types, with each of which the kind and extent of erosion can be correlated.

Soil erosion is usually much more severe on the dry-meadow type and steep slopes of the grass-timber type than on the wet-meadow type. In some instances wet meadows have changed to dry meadows, deep gullies having permanently lowered the water table or former moisture-producing slopes having become denuded and barren. In other instances, however, the flora of the dry-

meadow type is a reflection of the inherent texture and porosity of the soil and subsoil—particularly the subsoil.

The mountain-meadow types resemble closely in floristic composition many of those found at higher elevations in eastern Oregon and northern California. A wet-meadow type, located in the southern Alps, at Cavalese, a short distance north of Trento, has a floristic composition very close to that found in some of the higher meadows in the mountains of northeastern Oregon.

1. *The wet-meadow type*, when in good condition is characterized by such species as: Tufted hairgrass—*Deschampsia caespitosa*, sweet vernalgrass—*Anthoxanthum odoratum*, redtop—*Agrostis vulgaris*, mountain redtop—*Agrostis rupestris*, bluegrass—*Poa alpina* and *P. pratensis*, sheep fescue—*Festuca ovina*, red fescue—*Festuca rubra*, mountain fescue—*Festuca pulchella*, wild fescue—*Festuca silvatica*, mountain timothy—*Phleum alpinum*; and such legumes as: *Trifolium pratense*, *T. repens*, *T. badium*, *T. montanum* and *Lotus corniculatus*, with a scattering of such weeds

NOTE.—The author is regional range conservationist, Soil Conservation Service, Portland, Oreg. Scientific names and spelling are based on "Flora Italiana Illustrata," by Prof. Adriano Flore—Tipografia Editrice Mariano Ricci—Florence.



Dry-meadow forage type. Soil has all been eroded from rolling hills in background. The floor of the meadow has lost 6 to 8 inches but is still producing a fair quality of forage.

as: *Potentilla* spp., *Primula* spp., *Erigeron* spp., *Veronica* spp., *Saxifraga* spp., *Hypericum* spp., *Campanula* spp., *Leontodon* spp. and *Rumex* spp.

2. The dry meadows in good condition are characterized by such species as: redtop—*Agrostis alba*, *A. canina*; bluegrass—*Poa pratensis*, *P. palustris*, *P. violacea*, *P. bulbosa*, *P. compressa*; Junegrass—*Koeleria cristata*; fescues—*Festuca ovina*, *F. laxa*, *F. silvatica*; bromegrasses—*Bromus inermis*, *B. erectus*; timothy—*Phleum pratense*; orchardgrass—*Dactylis glomerata*; wheatgrasses—*Agropyron caninum*, *A. Junceum*, *A. repens*; such legumes as *Trifolium alpinum*, *T. campestre*, *T. badium*, *Lotus corniculatus*, *Anthyllis montana*, *A. hypoglottis*, *Astragalus montanus*, *Lathyrus montanus*, *L. vernus*, *Vicia silvatica*, *V. dumetorum*; and such weeds as *Geranium* spp., *Achillea macrophylla*, *A. atrata*, *A. millefolium*, *Daucus Carota*, *Tenacetum* spp., *Erigeron* spp., *Potentilla* spp., *Cirsium* spp., *Euphorbia* spp.; such woody plants as *Artemisia* spp., *Arctostaphylos* spp.

3. Grass-timber meadow types are located chiefly on slopes where the grazable forage may appear in parklike areas between clumps of trees or beneath a scattered tree overstory. Pastures in good condition in this forage type are characterized by such species as the bromes—*Bromus erectus*, *B. inermis*; the wheatgrass—*Agropyron caninum*; ryegrass—*Lolium multiflorum*; wild ryegrass—*Elymus Europaeus*; wild fescue—*Festuca silvatica*; bluegrasses—*Poa compressa*, *P. cenisia*, *P. violacea*, *P. alpina*; oatgrasses—*Avena pubescens*, *A. versicolor*, *A. montana*, *Trisetum*

*argenteum*; reedgrasses—*Calamagrostis villosa*, *C. tenella*; meadow foxtail—*Alopecurus Gerardi*; needlegrass—*Stipa capillata*; such legumes as *Trifolium montanum*, *T. alpestre*, *T. spadiceum*, *Astragalus excapus*, *A. alpinus*; such weeds as *Carum Carvi*, *Hieracium* spp., *Chrysanthemum* spp., *Veratrum* spp., *Aconitum* spp., *Polygonum* spp.; and such woody species as *Salix* spp., *Juniperus communis* and *Vaccinium uliginosum*.

Erosion on the wet-meadow type pastures generally consists of gullies, originating from stock trails, from overused night corrals, from excessive trampling around springs and watering troughs, and from slips of considerable size on the sides or rims of the basins or valleys. Injury is generally localized. Slips are caused chiefly by deep-cut stock trails or roads running across the toes of steep slopes or pitches when the soil is comparatively shallow or where it rests on a natural slip plane of rock, impervious clay, schist, or serpentine. Sheet erosion does occur, when there is overgrazing late in the season, from the snow melt of early spring. It does not occur from too early grazing or from overgrazing on pastures which are in fair or better condition provided some forage regrowth is permitted before the snows come. Evidence of sheet erosion on the wet-meadow type is most apparent on those pastures near old settlements or towns, or near very old farmsteads where long continued and late grazing has permitted recurring surface erosion over an extended



Wet-meadow forage type; fair to good condition. Slope is steep on side of narrow valley. Forage species are those characteristically found on basins and valley bottoms. This meadow, temporarily grazed too closely, has generally been properly grazed.

period of time. Such areas are easily identified by the presence of various-sized rocks and cobblestones lying on the surface of the ground. Such stones generally exhibit sharp surfaces, showing little evidence of long exposure; in extreme instances such rocks may literally cover the surface.

Remedial measures involve, in addition to the application of good grazing practices, temporary non-use of eroding areas, reseeding and replanting areas of exposed soil, development of properly located stock-water facilities to eliminate excessive traveling and trampling by livestock, realignment of trails and roads away from the toes of hazardous slopes, and in some instances the removal of stones from the surface. The removal of surface stone, however, is not an economical practice except where the soil is deep or where it is desired to harvest hay from the meadow, or where the stones are exceedingly numerous and they can be disposed of with short hauls. One example of an economically successful disposal of surface stone was observed where the water-spreading system for the meadows consisted of a series of fanlike trenches to spread irrigation water. These trenches were filled with nearby surface stones, then covered by the soil taken from the ditches.

Erosion on the dry-meadow type mountain pasture characteristically is much more severe than on the wet-meadow types. It is seen in its most severe forms on mountain pastures in the Central Appenine Mountains. Many of the pastures at elevations of 1,300 to 1,600 meters are basins or round valleys with surrounding steep-sided ridges rising 300 to 600 meters above the basin or valley floor. Here extensive areas of the pastures are subject to mud, sand, and gravel overflows that may form fans of 5 to 25 hectares in extent; or, if the gradient of the pasture is steep, deep-cut gullies are gouged out from the toe of the slope to the outlet of the valley or basin, where the wash from the surrounding ridges is carried across the meadow and dumped on lower-lying land. Topsoil losses on pastures long overgrazed are severe both from spring runoff following the snow melt, which is usually during the time frost is leaving the ground, and from winds which occur during the hot part of the summer and early fall. High winds may occur frequently during the latter part of the season. The dry-meadow types

are frequently on open, porous soils, so that when the vegetal cover is reduced by misuse and the protecting organic materials of the soil surface are carried away, valuable plant food elements are leached downward by the rapid percolation of soil moisture. On some dry-meadow types, where the substrata consist of limestone formations, excessive percolation of topsoil moisture has dissolved the underlying strata and extensive sinks have resulted. Areas varying in size from a few square meters to several hectares have dropped 1 to 6 meters. Such sinks are generally covered with soil on the sides and bottom. The mountain pasture "Campo Felice", some 300 hectares, located 25 kilometers south of Aquila in the Province of Abruzzo, is an example of a pasture where such phenomena are occurring.

Remedial measures and practices to control and prevent erosion on dry-meadow type pastures include, in addition to the adoption of sound grazing practices, development of livestock water supplies, and the accumulation of plant and organic residues on the surface of the soil. Maintenance of adequate vegetal cover through the dry summer months prevents excessive evaporation and wind erosion, and reduces over winter the effects of frost and spring runoff. Reseeding and fertilizing of depleted areas, and total exclusion of livestock from the surrounding steep ridges and mountain sides, are important measures if permanent improvement of such eroding meadows is to be successful.

Erosion on the grass-timber types is ordinarily not severe. But as this type generally is found on long slopes of moderate to steep gradient, there are some pastures that have been subjected to long continued abuse and misuse where practically all of the topsoil except that held in place by tree roots has been eroded away; the trees have the appearance of growing on mounds or pedestals. Generally, in this forage type, the erosion pattern is that of small gullies and numerous rills arranged fanwise, funneling into lower depressions and drainageways.

Remedial measures, in addition to the application of good grazing practices, include actions to build up plant residues and organic matter, reseeding and replanting denuded and depleted areas, development of livestock water facilities to reduce travel and trailing of the stock, and the careful placement and frequent moving of night corrals.





Hart hauls cottonseed hulls to his farm and works them into the soil to improve fertility. Some of his dairy cows are seen here working over a pile of hulls just brought from gin.

## WAR VET TRANSFORMS FARM

By JAMES E. WRIGHT

**A**LLEN HART was working on ranches in Arizona because he liked livestock. Then came the war. After 3 years with the Army Air Corps in China, Burma, India, Ceylon, and other places, Hart was discharged in September 1945.

He came back to Arizona with some ready cash and a feeling of extreme restlessness. As he puts it, "I realized that there was just one thing to do, in a hurry—buy a place that would tie my money up, and tie me down. That didn't leave much time for shopping around, so I bought just about the first farm I found for sale."

Hart's farm is in the lower Safford Valley, where considerable land is hardly suitable for irrigation. The soil is tight and usually contains salt or alkali. His 40 acres were barely above marginal.

Since the war veteran's main interest was livestock, he immediately set about to improve his pastures. The Gila Valley Soil Conservation District annually sponsors a buying pool for grass and legume seed, so Hart contacted the district

supervisors about plans for improving his pastures.

"You see, I'm not a farmer," he told district supervisors. "I even had to ask the former owner how close together to cut openings in the ditch bank when I wanted to irrigate.

"And you should have heard the answer. The former owner said we'd not have to cut the bank at all as there were enough gopher holes to let out all the water. And he certainly was right. The water ran everywhere, even under the house."

The outcome of Hart's talk with the supervisors was the decision to put a complete soil and water conservation program on his farm. Soil Conservation Service technicians working with the district helped plan his program, which provided for pasture reseeding, soil fertility improvement, and a more efficient irrigation system.

The farm was planted to barley when Hart became the owner in the summer of 1946. He found that part of the crop wasn't worth combining, and the portion that was harvested barely paid the cost of the work.

The years 1946 to 1948 were considered drought years, even in the arid Southwest. The Gila River provided little water toward the latter part of

NOTE.—The author is conservation aid, Soil Conservation Service, Safford, Ariz.

this period. Wells from which supplemental irrigation water was pumped gradually weakened and many failed entirely.

But Hart stuck to carrying out his conservation plan. He improved his irrigation system and worked constantly to increase fertility. Because of the unusual soil conditions, Hart and the technicians experimented with pasture grass mixtures, some of which were successful. This hard work soon paid dividends.

In 1946 Hart sold only 151 pounds of butterfat. In 1947 he sold 453 pounds. He also sold 1,195 gallons of whole milk. The following year he marketed 2,338 gallons of milk and 6,015 pounds of beef. Another 4,675 pounds of beef were sold during the spring of 1949, as well as other products on which records are not available.

Income statistics are interesting in view of the farm's history before Hart became the owner. Any one of the numerous animals sold by him certainly had a greater market value than the entire barley crop he found on the place.

As an irrigated farm, Hart's is unusual in many ways. He hasn't planted a cash crop since he became owner. The only permanent fences are those on the property lines. The entire income is from dairy and beef cattle, and chickens. Enough hogs are raised to provide meat for the family.

## THE LOMPOC VALLEY RESPONDS TO IRRIGATION

By HERB BODDY

**L**AND transformations in California's Lompoc Valley are today running a close second for top billing to that State's world-famed "Oasis of Flowers." The new show window of conservation farming in Santa Barbara County centers in 1,500 acres of smoothed-down land, leveled by farmers for irrigation.

Ironing out farm-land hummocks and low spots is the first step in the irrigation program of the Lompoc Soil Conservation District, designed to bring water to thirsty crops. The investment farmers are putting in land leveling is already netting good gains in increased crop yields and higher farm incomes.

Dry-land crop production in the Lompoc com-

"We try to make the milk cows and chickens meet current living expenses, but not all the products get off the farm," Hart pointed out as he indicated a refrigerator packed with butter, cream, milk, eggs, and dressed chickens. Certainly Thelma, his wife, and Cerenne, their 16-year-old daughter, show no signs of malnutrition.

"While the livestock keeps a fellow around fairly close, I find time for other things," Hart declared. "During the cotton ginning season I haul cottonseed hulls from the gin to my fields. These loosen the soil and improve the fertility. One year when water was short, my yearlings were not ready to sell at marketing time, so I had to hold them a few months. In order to tide us over, we went out and picked cotton for the neighbors."

When the Harts have carried out their conservation plans their farm will not resemble the one they bought. It has taken time for them to rebuild it to its present condition and it now provides feed for 25 to 30 cows a year. Hart feels that, during favorable years, his 40 acres eventually can be put in condition to produce the feed needed for 60 head of cattle. The soil on his farm may not be capable of producing that amount of feed, but there is little doubt that he will attain his goal before long.

munity has dropped off sharply in recent years. Rainy seasons have been of shorter duration. Even dry-land farmers, accustomed to getting along with little moisture, have found that growing crops on parched, dust-dry acres, year after year, is a losing battle.

Good crop yields are reported sometimes by dry-land farmers during times of above-average rainfall. But of late many landowners have despaired of farming their tinder-dry soils. On short water rations, their hay, grain, and bean crops have been bringing only token returns.

In 1948 and 1949 more and more of the valley's landowners and tenant farmers changed over to irrigation to make their farms pay. Farmers who tapped well-stocked underground reservoirs had one of their best crop harvests in years. Irriga-



One of the smaller leveled fields on the Lewis farm which was seeded to oats and vetch for immediate cover. Residues will be left undisturbed to provide mulch and seed for natural reseeding.

tion is also making it easier to cash in on the profitable vegetable markets in Santa Barbara, San Francisco, and Los Angeles.

Lompoc's low rainfall belt has long baffled row croppers. It wasn't until farmers voted to put more than 208,000 acres in the Lompoc Valley in a soil conservation district that they began to get full use from their acres.

On the Lompoc farm scene today it's common to see heavy land-leveling equipment at work skimming off hummocks and filling swales.

Two Lompoc farmers, John and Ralph Lewis, who figure to gain by leveling their lands, echo the sentiment of the community's district cooperators.

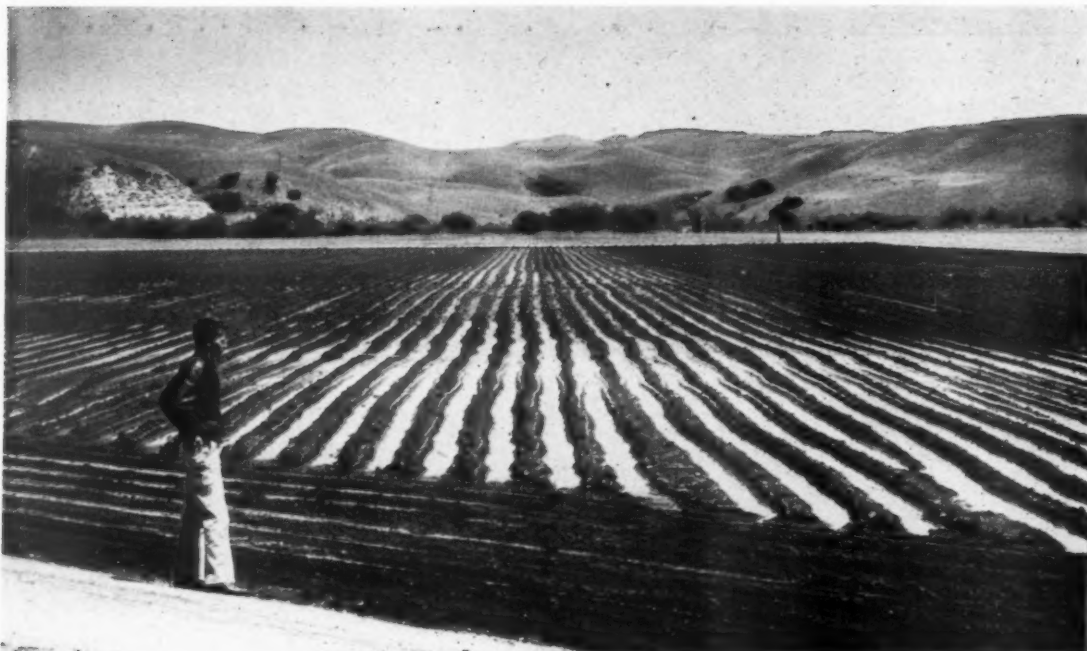
Says John, "It wasn't so many years ago that we farmers had to be content with the way Nature made our lands. If our acres were rough, we farmed them the best way we could. Now times have changed! Today, almost any dry-land farmer can do a face-lifting job on his land, with modern land-moving equipment and technical help from the Soil Conservation Service. That's why so many of Lompoc's veteran dry-land ranchers are switching over to irrigation."

The Lewis brothers have dry-farmed 190 acres, 4 miles east of Lompoc on the Santa Ynez River, since 1928. The 90 acres they leveled for irrigation in the spring of 1948 was the key to their bumper row-crop harvest.

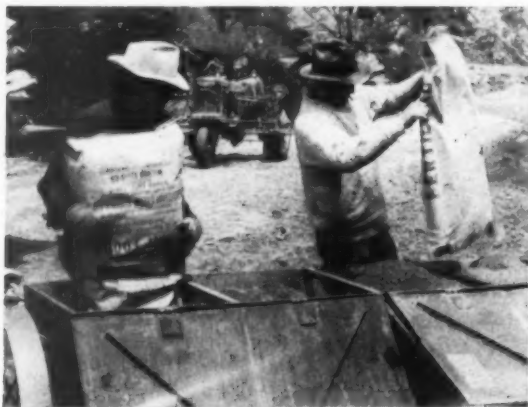


The Lewis brothers check their conservation plan before each step in their program.

For years the Lewises stood the uncertainty of the seasonal rainfall with grim forbearance. During heavy rainfall years, their hay, grain, and bean crop harvest was good. But four sacks of



One of the Lewis fields while being irrigated. The brothers expect to double bean production and to cash in on a profitable truck-crop market.



John and Ralph Lewis have worked out a job-priority routine; here they fill a fertilizer distributor.

beans per acre and one crop a season was the best they could get in other years.

"After harvesting the 1947 crop, there was hardly enough left for a church mouse," John mused. "Then we joined the Lompoc district. Our fortunes improved from that day. Conservation farming changed our production from one crop a season to five crops in 3 years."

The Lewis brothers sought the aid of the district directors to save their farm. Like many landowners eager to remake their farms, they needed engineering help. The directors obtained technical assistance for them from the SCS staff.

It would have been difficult for the average farmer to lay out the Lewis acreage for land-leveling work. Some swales were 6 feet deep and there was a deep gully running across one field.

When the technicians surveyed the 90 acres, the Lewis brothers worked side by side with them. Putting a field in shape for irrigation isn't just a matter of flattening the land. The land must have a slight grade so that the furrow system will flow evenly. Irrigation-runs over the fields must not be too long nor too short and water-distribution lines must be the right size and properly located.

Halfway through the leveling work, a bulldozer operator uncovered an Indian burial ground, including the remains of three tribal members, earthenware, and hunting implements. Many more graves were uncovered, but only three were intact. The find is now part of the collection of Clarence Ruth, Lompoc curator.

The land-leveling work was completed late last

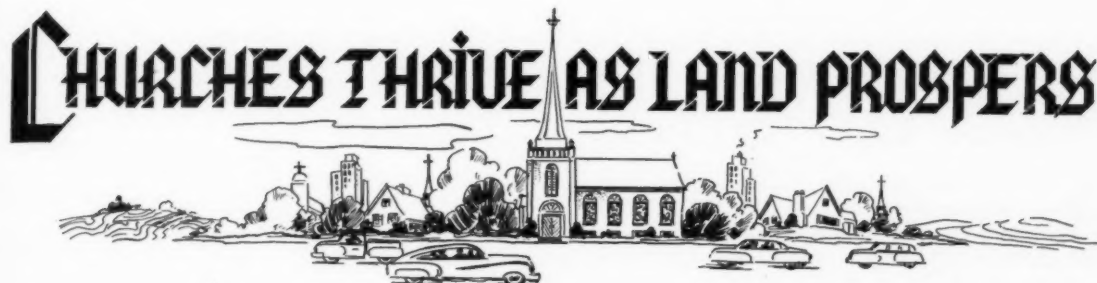


spring, after 87,509 cubic yards of soil had been moved. The new system includes a permanent pipe line, wellspring, and pumping plant. Water at the rate of 1,200 gallons per minute is on tap for crops. The Lewises follow a fertilization program to enrich some of the more deeply cut sections of their field.

A quick glance at the returns shows top crop

yields unheard of before on the ranch. The Lewis brothers expect to double bean output over what they have known in average dry-land farming. Soil-building green-manure crops can now be grown. Land value has increased manyfold.

The Lompoc district reports that more than 3,000 acres were leveled for irrigation by farmer-cooperators last year.



**C**ONSERVATION of the soil gets to be an attitude that carries over into saving other things as well, the Reverend Garland Stafford of Lewisville, N. C., told North Carolina soil conservation district supervisors at the annual meeting of their State association at Burlington.

"A man may begin by saving soil to make money," the speaker said. "It will do that. And it will do something fine for his outlook on life and his stability as well. I have yet to see a conservation farmer who was not congenial with the ideals and aims of the church, nor one who did not look with confidence to the future of his farming operations."

"It has been noticeable that workers in conservation services and organizations have gone about their work with a passion compelled by a seeming sense of the overwhelming and fundamental importance of what they were doing for all life. The atmosphere in conservation is Christian."

Rev. Mr. Stafford, who is chairman of the Commission on Town and Country Work of the Western North Carolina Conference of the Methodist Church, pointed out that rural churches are recognizing the importance of soil conservation to them and are helping the movement along.

"It may be considered axiomatic," he said, "that farm communities that save soil save their churches and save their people spiritually."

Referring to a study of 222 rural Methodist churches made several years ago by Dr. T. S. Buie, southeastern regional director of the Soil Conser-

vation Service, which showed a direct relation between the degree of erosion and the state of the church in a given community, he said:

"That the degree of soil erosion seems to have more effect on the vitality of a church than its denominational affiliation, doctrinal beliefs, form of church government, or history of pastoral oversight is significant."

"The principal reason for abandoned churches is abandoned homesteads. Church administrators have viewed with more alarm the death of churches than the disease that produced the fatalities. The church must courageously warn of the cultural and moral decay that follows the destruction of soils and other resources."

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## NOTES FROM THE DISTRICTS

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**VETERANS ON THE LAND.**—Conservation farming, in cooperation with the West Fork (W. Va.) Soil Conservation District, has enabled 118 World War II veterans enrolled in a GI agricultural training course to make outstanding progress through the investment of more than a half million dollars in the purchase and improvement of Gilmer County farm land.

Sixty-eight percent of these vets own farms that average 132 acres. Thirty-six have purchased farms since they entered the cooperative program. Soil conservation practices established include 974 acres of meadow seeded, 326 acres of strip cropping, 8,590 feet of diversion ditches, 38,317 trees planted, 22,050 multiflora roses set for fences, 50 acres of cover crops, 150 acres of nurse crops, and 16,636 rods of new fence.

**BEEF GAINS.**—Sixty head of steers have helped a Greenbrier, W. Va., farmer and his three sons get better pasture building courses. G. S. McKeever and his sons, Vincent, Ivan, and Ray, jointly bought the steers and divided them into three approximately equal lots. These were the results at time of sale, after 28 days on pasture.

The elder McKeever's steers, pastured on native grass, partly treated but not mowed, made an average gain of 14 pounds.

Ray used native grass pasture, partly treated and partly mowed. His steers made an average gain of 22 pounds.

Ivan and Vincent's steers, pastured mostly on Ladino and orchardgrass, treated and mowed, gained an average 76 pounds.

At 30 cents per pound, the gain for 28 days would be \$4.20 per head, or \$84, for the elder McKeever's steers; \$6.60 per head, or \$132, for Ray's steers; and \$22.80 per head, or \$456, for Ivan and Vincent's steers.

Two other factors had a part in results. The steers of Ivan and Vincent had a better water supply than those of their father. His herd was driven to the barn lot, loaded on trucks, hauled 2 miles to scales, unloaded and weighed. Ray's steers were driven 2 miles before they were weighed. The steers of Ivan and Vincent were driven a short distance from pasture to scales. There is more driftage when they are driven to trucks, and loaded and unloaded before weighing.



**WELL WORTH ATTENDING.**—History was made at the annual meeting of the Huron, S. Dak., Chapter of the Soil Conservation Society of America, in February. Ninety-five employees of the Soil Conservation Service who are members of the State chapter attended entirely at their own expense, for the purpose of self-improvement. The employees came in groups and used personal cars, none being on a per diem basis or entailing Government travel expense. The large representation, drawn from many parts of the State, reflected the eagerness of SCS personnel to become more capable in soil conservation science and technique—and to pay for this improvement themselves.

**SILORING TROUGH.**—When Marsden Bacon, Middletown, Conn., farmer was pouring a concrete silo, he sent workmen to a pasture, close to his new farm pond, to build a good watering trough. They put in a foundation and built one silo ring, 14 feet in diameter and 2 feet

deep. The water supply is piped from the pond. A float valve is located in the center, where the cows can't get to it. A plug for drainage is in the bottom. Now all his cows can drink at one time, whenever they want to.

**YEAR OF ACCOMPLISHMENT.**—Supervisors of the Conecuh River (Ala.) Soil Conservation District report a large increase in application of soil and water conservation practices during 1949. Increases were especially notable in the planting of perennial and reseeding annual legumes as indicated below:

Practice applied	1948	1949	Increase
	Acres	Acres	Percent
Sericea.....	1,943	3,350	72.4
Kudzu.....	873	1,252	43.4
Caley-peas.....	2,609	6,510	149.5
Crimson clover.....	1,157	8,630	645.9
Tall fescue and clover.....	596	1,960	228.9
Lupine.....	35,000	73,000	108.6
Terraces.....	10,060	12,540	24.7
Fish ponds (number).....	28	53	89.3

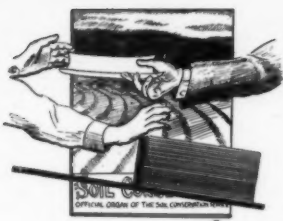
In addition, farmers cooperating with the district harvested 3½ million pounds of blue lupine seed and 100,000 pounds of combine-run sericea seed in 1949. This is almost double the amount harvested in the district during any year previously. All agencies helped to get the job done.

Ninety-four percent of the fescue and clover mixture, 76 percent of the crimson clover, 70 percent of the Caley-peas, and 53 percent of the lupine planted in the district were on cooperators' farms. All of the sericea seed and 75 percent of the lupine seed harvested came off cooperators' farms. All the sericea and kudzu planted and all the terraces and fish ponds built were also on cooperators' farms.

SCS technicians helped farmers to plan 509 farms, covering 50,962 acres.

**THIRTY NEW READERS.**—The First National Bank of Elmer, N. J., has entered 1-year subscriptions to SOIL CONSERVATION Magazine for 30 Salem County farmers cooperating with the South Jersey (N. J.) Soil Conservation District. The bank regards this as an investment in improved agriculture which will further the prosperity of the community.

**HOME OF OWN.**—At least one soil conservation district will soon have its own building. At Bedford, Iowa, Merle Travis, Wayland Livingston, and Charles Wintermute, Taylor County district commissioners, have begun work on the building on the district's own lot which was purchased last summer. A garage has already been built.



**MAGAZINES FOR SCHOOLS.**—Supervisors of the Black Belt Soil Conservation District in Alabama voted at their January meeting to give each school in the district a year's subscription to *SOIL CONSERVATION Magazine*.

**HANDY REFERENCE.**—The Wabasha County (Minn.) superintendent of schools requested "Kits for Rural Teachers" to be distributed to all teachers in the county. Interest developed at a workshop sponsored by the Winona State Teachers College. Similar kits may be distributed to Goodhue and Dakota County teachers. Kits supplied last year to 35 rural school teachers in Goodhue County proved very effective.

**POND PAYS OFF.**—A \$330 farm pond, holding 65,000 gallons of water, saved a \$15,000 barn with contents, a \$7,500 implement shed with contents, and a milk house belonging to John Fitzgerald, Chenango County supervisor, near Oxford, N. Y. Firemen, traveling 3 miles from Oxford, after a long delay in getting the alarm, arrived too late to prevent destruction of the Fitzgerald house. "Without the pond," Fitzgerald says, "I would have lost everything but my land."

**NEGRO STUDENTS IN CONTEST.**—Thirty Negro high-school students from the Halifax County work unit in the Tar River (N. C.) Soil Conservation District have entered the soil conservation speaking contest sponsored by the North Carolina Bankers Association. The students along with the Negro county agent were taken on a tour to observe the needs for soil conservation and to a farm that had applied all soil and water conservation practices recommended by the Soil Conservation Service.

**SCHOOLS SUPPLIED.**—The East Fillmore (Minn.) Soil Conservation District is giving a year's subscription to *SOIL CONSERVATION Magazine* to each of the district's seven village school systems. In announcing the gift, the supervisors expressed the hope that the magazine would be kept in the libraries where all pupils will have access to it.

## REVIEWS

**PASTURES.**—By Richard Y. Bailey, Robert R. Lancaster, Edwin James, and Roland R. Harris. Edited by Paul W. Chapman. Turner E. Smith & Co., 441 West Peachtree Street, Atlanta, Ga. 500 pp. 189 Illustrations. \$2.96.

"Pastures" is a product of excellent editing as well as sound and readable writing. It is physically inviting, easy on the eyes, convenient to handle. Furthermore, and here too is the mark of good editing, the book is up-to-the-minute in its content—a quality all too rare in the textbook field. There's no dust on its pages.

Feed forage means grass, hay, grass silage. That's what the book "Pastures" is about.

As Dr. Clarence Poe says in the introduction, this book points the way to a two-armed type of farming, crops, and livestock—a system that provides income-producing work on an all-year basis, rather than for just 6 months; a system of farming that conserves the soil; a system under which yields become increasingly larger and more profitable.

Mass progress waits upon mass understanding of the advantages of conservation or grassland farming. To aid in carrying this message, "Pastures" was written.

The book is written in simple words and easy sentences. It is a story-telling book. It tells stories of the grassland achievements of farmers; it reports the work of experiment stations. It is well organized. Designed as a textbook, it is also a handbook of information—a farmer's guide.

Aimed at all-year grazing it deals with permanent and temporary pastures. Some of the chapter titles: *Farming With Grass, Forage Plants, All-Year Grazing Systems, Permanent Pastures, Grazing From Cropland, Winter Grazing, Summer Grazing, Grass Silage, Quality Hay.*

The authors include four widely known specialists: R. Y. Bailey, chief agronomist, Soil Conservation Service, Southeastern Region; Robert R. Lancaster, pasture specialist, Extension Service, A. & M. College, Texas; Edwin James, forage crop specialist, USDA; and Roland Harris, agricultural engineer with the University of Georgia.

**GOOD ROADS QUELL FLAMES.**—When W. E. Potter, Jersey Mountain, W. Va., farmer, and SCS technicians made plans for a new farm pond, they included two good roads as approaches. This idea paid off in February 1950 when a three-story cave and storage caught fire. Flames threatened to destroy the structure until the Romney firemen arrived and hooked their pumps to the pond and quickly put out the fire after only \$500 damage. Potter is a cooperator with the Potomac Valley Soil Conservation District.

At the beginning of 1950 there were 2,196 soil conservation districts in the United States being assisted by the Soil Conservation Service.



Painstaking scientific processes are back of many of the remarkable achievements in stabilizing and improving western range and farm lands. Two of these processes are depicted in the pictures here, showing E. O. Brown, seed analyst, at work in the Soil Conservation Service nursery laboratory at San Antonio, Tex.

In "purity analysis" (above) a large sample of grass seed is broken into working samples by the cone-shaped separator, then cleaned by sieves or blower. Actual purity count is by hand, grass seeds being separated from "foreign" matter—crop seeds, weed seeds, inert material. Percentage of purity is determined by weight.

In "germination tests" (below), samples of about 400 seeds each are planted in moistened substrate and placed in germination ovens. To simulate the natural weather cycle, the samples are shifted from warm ovens to cool ovens at intervals. Freshly harvested seed of certain species is quite dormant, a condition which is broken by imposing freezing temperatures before placing samples in germination ovens. Percentage of germination is determined by actual count of sprouted seeds.

